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Family-Group Names in Sphecidae (Hymenoptera: Apoidea)

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Abstract.—The known family-group names for Sphecidae are listed with their authors and dates of publication. The status and proper spelling of these names are reviewed. The only major change is that Bembicinae Latreille 1802 has priority over Nyssoninae Latreille 1804. The subtribe Gastrosericina André 1886 has priority over Tachytina G. Bohart 1951. Alyssontini and Chloriontini are the correct spellings for Alyssonini and Chlorionini, respectively. Crabronidae is shown to be the correct name for the Larridae of recent authors; Larridae being a younger name. The gender of the genus *Pison* is discussed, and is regarded as neuter. Some recent developments in the classification of Sphecidae are reviewed.

Usage of family-group names is governed by priority just as with generic and species level names. The stability of subfamily and tribal names is as important as that of species and genera, but all too often the status of family-group names is ignored. Unfortunately this was the case when *Sphecid Wasps of the World* was published (Bohart and Menke 1976). In the last 20 years work on Sphecidae has intensified, and phylogenetic research currently in progress by several scientists may result in rearrangements of some higher taxa. Thus a review of family-group names in Sphecidae that will enable others to determine priorities is very appropriate now. Family-group names for Pompilidae were treated by Day (1981) and those for bees by Michener (1986).

Various problems arise in a study of family-group names. The first is finding all of the names in the vast literature available, and another is determining the earliest (oldest) use of any particular name. A third problem is determining the actual dates of publication of two or more works appearing the same year. I have tried my best to locate all family-group names for Sphecidae, and have enlisted the help of others in this endeavor. Yet, some may have been missed. I would appreciate hearing from anyone who knows of omitted names. Family-group names of fossil taxa are included as a separate section.

A good starting point when searching for family-group names is Handlirsch (1925). He cited many names although I found occasional errors and the original source for each one must be checked. Dalla Torre's (1897) catalog is another useful source of family-group names; he also gave derivations of generic names.

During this study I became curious about who first proposed identifying family names with the ending -idae. William Kirby (1813:88), in a long footnote in his paper on Strepsiptera, suggested using the suffix -idae to denote subsections of insect orders [i.e., families]. Subsequent workers adopted Kirby's proposal and -idae became the standard family suffix.

THE INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE

Other authors have presented rather exhaustive discourses on how the Code ap-

plies to family-group names and various problems that can arise: Fitton and Gauld 1976, Michener 1986, Sabrosky (in press). The following notes outline the more important provisions of the 3rd edition of the International Code of Zoological Nomenclature (1985) that govern family-group names in Sphecidae.

1. Family-group names must be based on the stem of a generic name (Art. 11f). The stem is based on the genitive (possessive) case of the generic name. Some commonly used names in Sphecidae have had to be emended because they were not derived from correct stems. For example, Alyssontini is correct, not Alyssonini. Names not based on genera are unavailable. Examples of these are found in Ohl (1996).
2. Family-group names based on the same type-genus take the same author and date regardless of rank (Art. 36). Latreille (1802b) proposed Sphegimae [correctly Sphecinae]. Thus Sphecidae, Sphecinae and Sphecini all take Latreille 1802 as their author.
3. Family-group names are subject to the rules of priority (Art. 23) but there are rare exceptions (Art. 40b) that have to do with usage. For example, Pelopoeinae Leach 1815 was based on the genus *Pelopoeus* Latreille which became a synonym of *Sceliphron* Klug. Ashmead (1899) proposed the family-group name Sceliphrinae, and since then it has been nearly universally used for the group. Art. 40b permits maintenance of the younger name, and it takes the date of the older name it has replaced. Thus Sceliphrinae is dated 1815. Although I understand the reason for emending the date of publication in this way, I personally dislike the practice.
4. New family-group names have appeared in theses or their abstracts (Budrys 1988, Ohl 1993), but Art. 8b indicates that any work that includes a disclaimer (i.e., Budrys 1988) is not published. The same Article may apply in the case of Ohl (1993) and Art. 9(11) may also be relevant in his case; deposition of a thesis in a library does not constitute publication.
5. Family-group names based on vernaculars such as in Lepeletier 1845 (French: Cercérites) may be available under the provisions of Article 11f iii. It is difficult to determine if names are French vernaculars if no accent is present because the ending -ites is sometimes correct in both Latin and French. So I have also given the first recognizable Latin version of such names in brackets.

CHRONOLOGICAL LIST OF FAMILY-GROUP NAMES IN SPHECIDAE

This list starts with the oldest author proposing family-group names. Under each author are all of the names proposed in that publication followed by the page where the name or names are found. This is followed by the type genus and the stem upon which the family-group name should be based. Whenever necessary I have clarified spellings or provided other information in brackets. Complete citations for each author are in the Literature Cited.

Latreille 1802a (April):

Apiariae, p. 425. *Apis* Linnaeus 1758, Ap-.

Latreille 1802b (November):

Sphegimae, p. 331. *Sphex* Linnaeus 1758, Sphec- [Spheg- is incorrect, see Discussion below].

Melliniores, p. 337. *Mellinus* Fabricius 1790, Mellin-.

Crabronites, p. 340 [printed as "140" in error in some copies of the book]. *Crabro* Fabricius 1775, Crabron-.

Bembiciles, p. 343. *Bembex* Fabricius 1775 [recte *Bembix*], Bembic-.

Philantores, p. 365. *Philanthus* Fabricius 1790, Philanth-.

Latreille 1804:

Nyssonii [recte Nyssonini], p. 180. *Nysson* Latreille 1802, Nysson- [The correct stem has a t after the n, however, the International Commission on Zoological Nomenclature in Opinion 1115 (1979) ruled that Nyssoninae should be maintained and the name was added to the Official List of Family-Group Names in Zoology. Hence the legal stem is Nysson-. For explanation of the grammatically correct stem see Discussion below].

Latreille 1810:

Larratae, p. 289, 438. *Larra* Fabricius 1793, Larr-.

Leach 1815:

Pelopaeida [recte Pelopoeida], p. 150. *Pelopaeus* Latreille 1802 [recte *Pelopoeus*], Pelopoe-.

Oxybellida [recte Oxybelida], p. 152. *Oxybelus* Latreille 1797, Oxybel-

Dahlbom 1835:

Pemphedronides, p. 2, 6, 8 [recte Pemphredonides]. *Pemphredon* Latreille 1797, Pemphredon- [Corrected to Pemphredonides in Isis von Oken 1836, Heft 4, col. 288, and cited as Pemphredonidae in Dahlbom 1842, p. 1. According to Don Cameron, *Pemphredon* is a feminine Greek word that means 'a kind of wasp'. Hence the correct stem is Pemphredon-.]

Shuckard 1840:

Ampulicidae, p. 178, 180. *Ampulex* Jurine 1807 [not specifically listed], Ampulic-.

Dahlbom 1842:

Dolichuridae, p. 3. *Dolichurus* Latreille 1809, Dolichur-.

Lepeletier 1845:

Cercérites, p. 1. *Cerceris* Latreille 1802, Cercer-. [Thomson 1870, p. 207 and 247 gave the latinized spelling Cerceridae]

Gorytites, p. 54. *Gorytes* Latreille 1804, Goryt-. [Costa 1859, p. 3, 26 and 55, gave the spelling Goritini but this may have been an Italian vernacular. The proper spelling would have been Gorytini. Dalla Torre 1897 (October), p. 535, gave the latinized spelling Gorytinae. Acloque 1897, p. 80, used the name Gorytesii.].

Trypoxylites, p. 224. *Trypoxylon* Latreille 1797, Trypoxyl-. [Thomson 1870, p. 207 and 250 gave the latinized spelling Trypoxylidae. The genitive of the neuter name *Trypoxylon* is Trypoxyl-, not Trypoxylon-. Incorrect use of the last stem resulted in the improperly spelled tribal name Trypoxylonini in many publications.]

Astatites, p. 231. *Astata* Latreille 1797, Astat-. [de Saussure 1867, p. 65, gave the latinized spelling Astatii which should have been spelled Astatini].

Costa 1858:

Psenini, p. 4, 21. *Psen* Latreille 1797, Psen-.

Costa 1859:

Stizini, p. 2, 4, 55. *Stizus* Latreille 1802, Stiz-.

André 1886:

Ammophilidae, p. 50. *Ammophila* Kirby 1798, Ammophil-

Gasterosericidae [recte Gastrosericidae] p. 51. *Gastrosericus* Spinola 1838, Gastroseric- [Spelled correctly by André 1888, p. 211].

Cresson 1887:

Mimesidae, p. 119. *Mimesa* Shuckard 1837, Mimes-.

de Saussure 1892:

Podiites, p. 419. *Podium* Fabricius 1804, Podi- . [Ashmead 1899, p. 348, gave the latinized spelling Podiinae].

Larradidae, p. 471. *Larrada* Smith 1856, Larrad-.

Fox 1895:

Lyrodini, p. 302. *Lyroda* Say 1837, Lyrod-.

Diploplectrini, p. 302. *Diploplectron* Fox 1893, Diploplectr-.

Miscophini, p. 302. *Miscophus* Jurine, 1807, Miscoph-.

Bothynostethini, p. 302. *Bothynostethus* Kohl 1884, Bothynosteth-.

Dinetini, p. 305. *Dinetus* Panzer 1806, Dinet-.

Dalla Torre 1897:

Exeirinae, p. 534. *Exeirus* Shuckard 1838, Exeir-.

Entomosericinae, p. 557. *Entomosericus* Dahlbom 1845, Entomoseric-.

Alysoninae [recte Alyssontinae], p. 562. *Alyson* Panzer 1806 [recte *Alysson*], Alyssont- [see Discussion below for explanation of correct stem].

Sericophorinae, p. 577. *Sericophorus* Smith 1851, Sericophor-.

Nitelinae, p. 697. *Nitela* Latreille 1809, Nitel-.

Ashmead 1899:

Anacrabroninae, p 163. *Anacrabro* Packard 1866, Anacrabron-.

Lindeniinae, p. 163. *Lindenius* Lepeletier and Brullé 1834, Lindeni-.

Thyreopinae [recte Thyreopodinae], p. 164. *Thyreopus* Lepeletier and Brullé 1834, Thyreopod-. [According to Don Cameron, *Thyreopus* is a compound Greek word meaning 'shield-foot' and the proper stem is thus Thyreopod-.]

Rhopalinae, p. 164. *Rhopalum* Stephens 1829, Rhopal-. [This name is a possible junior homonym of the heteropteran family-group name Rhopalidae Amyot & Serville, 1843, based on *Rhopalus* Schilling, 1827.]

Pisoninae [recte Pisinae], p. 241. *Pison* Jurine 1808, Pis-. [According to Don Cameron, it is impossible to know the true derivation of Jurine's genus *Pison*. If the name is based on the Latin word for pea, pisum, gender neuter, then the proper stem is Pis-. However, if the name was the Greek spelling of the common Roman proper family name Piso, gender masculine, then the correct stem is Pison-. See my comments on the gender of *Pison* under Discussion farther on. Currently this family-group name is treated as a synonym of Trypoxylini.]

Sceliphroninae [recte Sceliphrinae], p. 349. *Sceliphron* Klug 1801, Sceliphr-. [According to Don Cameron, *Sceliphron* is from the neuter of a Greek adjective meaning lean, slender; hence the correct stem is Sceliphr-].

Fernald 1905:

Chlorioninae [recte Chloriontinae], p. 166. *Chlorion* Latreille 1802, Chloriont-. [See Discussion below for explanation of correct stem].

Turner 1914:

Paranyssoninae [recte Paranyssontinae], p. 337. *Paranysson* Guérin-Méneville, 1844, Paranyssont-. [see comments under Nyssonii Latreille 1804 above].

Turner 1915:

Arpactinae, p. 67. *Arpactus* Panzer 1805, Arpact-.

Rohwer 1916:

Hoplisini, p. 654, 656. *Hoplisus* Lepeletier 1832, Hoplis-.

Börner 1919:

Palarini, p. 185. *Palarus* Latreille 1802, Palar-.

Handlirsch 1925:

Heliocausini, p. 807. *Heliocausus* Kohl 1892, Heliocaus-.

Bradley 1926:

Soleniini, p. 1029. *Solenius* Lepeletier and Brullé 1835, Soleni-

Brues and Melander 1932:

Dimorphidae, p. 503. *Dimorpha* Panzer 1806, Dimorph-.

Pate 1935:

Pemphilidae [recte Pemphilididae], p. 246. *Pemphilis* Risso 1826, Pemphilid-.

Pate 1936:

Karossiini, p. 151. *Karossia* Arnold 1929, Karossi-.

Bohart, G. E. 1951:

Tachytini, p. 945. *Tachytes* Panzer 1806, Tachyt-.

Evans 1959:

Ammoplanini, p. 182, 189. *Ammoplanus* Giraud 1869, Ammoplan-.

Bohart and Menke 1963:

Prionyxina [recte Prionychina], p. 94, 141. *Prionyx* Vander Linden 1827, Prionych-.

Bohart, R. M. 1966:

Aphilanthopsina [recte Aphilanthopina], 158. *Aphilanthops* Patton 1881, Aphilanthop-.

Menke 1967:

Odontosphecini, p. 144. *Odontosphex* Arnold 1951, Odontosphec-.

Pseudoscoliini, p. 147. *Pseudoscolia* Radoszkowski 1876, Pseudoscoli-.

Eremiaspheciini, p. 148. *Eremiaspheciu m* Kohl 1897, Eremiaspheci-.

Philanthinina, p. 148. *Philanthinus* de Beaumont 1849, Philanthin-.

Menke 1968:

Scapheutina, p. 91. *Scapheutes* Handlirsch 1887, Scapheut-.

Gittins 1969:

Psenuli [recte Psenulina], p. 50. *Psenulus* Kohl 1897, Psenul-.

Nagy 1969:

Heterogynidae [emended to Heterogynaidae in Opinion 1445, Intern. Comm. Zool. Nomencl. 1987:150–151], p. 7. *Heterogyna* Nagy 1969, Heterogyna-

Bohart and Horning 1971:

Stictiellina, p. 1. *Stictiella* Parker 1917, Stictiell-.

Bohart and Menke 1976:

Stangeellina, p. 87. *Stangeella* Menke 1962, Stangeell-.

Stigmina, p. 175, 185. *Stigmus* Panzer 1804, Stigm-.

Laphyragoginae, p. 217. *Laphyragogus* Kohl 1889, Laphyragog-.

Xenosphecinae, p. 437. *Xenosphex* Williams 1954, Xenosphec-.

Lomholdt 1985:

Mesopalarina, p. 22. *Mesopalarus* Brauns 1899, Mesopalar-.

Budrys 1988:

Several family-group names in Pemphredoninae were proposed in this brief, printed summary of his thesis, and it does not qualify as a publication because the cover has a disclaimer in Russian, "to be considered a manuscript" (see Art. 8b of the International Code of Zoological Nomenclature.)

Menke 1989:

Spilomenina, p. 740. *Spilomena* Shuckard 1838, Spilomen-.

Ohl 1993:

A number of suprageneric names were introduced in this work but some are not based on generic names and are therefore not available (Art. 11f). Also Ohl's printed thesis may not qualify as a publication under Art. 8b or Art. 9(11) of the Code.

Ohl 1996a:

The suprageneric names first proposed by Ohl (1993) are validly published here but some are unavailable because they are not based on generic names. The names in

question are Lutifera, Eusphecinomorpha, and Acutoclypeata. However, three of Ohl's names, Sphecinomorpha, Palmodomorpha, and Ammophilomorpha, could be construed as valid since they are based on generic names with -morpha endings. The suffix -morpha has been used in some insect orders to designate infraorders, as in the Heteroptera (Nepomorpha and others). However the Code does not govern ordinal-group names.

Nemkov and Lelej 1996:

Clitemnestrina, p. 11. *Clitemnestra* Spinola 1851, Clitemnestr-.

Olgiina, p. 11. *Olgia* Radoszkowski 1877, Olgi-.

Argogorytina, p. 11. *Argogorytes* Ashmead 1899, Argogoryt-.

Handlirschiina, p. 12. *Handlirschia* Kohl, 1897, Handlirschi-.

DISCUSSION

Stem of some Greek generic names ending in -on: According to Don Cameron a "t" has to be inserted after the "n" in *Alysson* and *Nysson* for the stem to be correct grammatically. The explanation is that these generic names are masculine nominative participles of Greek verbs. The genitive of *Alysson* is alyssontos, of *Nysson* nyssontos, thus the tribal names are Alyssontini and Nyssontini (as noted earlier, the spelling Nyssoninae (without a t) was conserved in Opinion 1115 of the International Commission on Zoological Nomenclature (1979). Paranyssonini is properly emended to Paranyssontini (a synonym of Miscophini). The genitive of *Chlorion*, based on the Greek word for the color green, is chloriontos, thus the tribal name is Chloriontini.

The correct stems for *Pemphredon* and *Trypoxylon* have been explained earlier in this paper.

Gender of the genus Pison: Jurine (in Spinola 1808) did not indicate the derivation of his new genus *Pison*, and there is no evidence in the description of its gender. The only included species was a patronym, *jurini* Spinola. Shuckard (1838) appears to have been the next author to treat the genus, and he clearly regarded it as masculine. Subsequent workers followed Shuckard until Kohl (1884, 1885) who interpreted the gender as neuter (earlier de Saussure, 1867, described one new species, *tahitense*, that indicates he regarded *Pison* as neuter). Although some of his contemporaries continued to treat *Pison* as masculine, Kohl's interpretation of the genus as neuter would prevail. Kohl was, after all, the foremost sphecid worker of his time. Dalla Torre (1897) in his world catalog of Sphecidae, considered *Pison* as neuter, and this, with minor exceptions, has remained its gender for the last 100 years. A considerable number of taxonomic papers published during this period have all treated the genus as neuter.

The Code does not seem to directly deal with this problem. Article 30 (d) addresses the gender of non-Latin and Greek names, but *Pison* is from one of these languages according to Don Cameron. Under the principle of first revisor, Shuckard (1838) could be interpreted as having established the gender of *Pison* as masculine. However, the principle of stability argues for maintenance of *Pison* as neuter, and this is my position. Thus the correct stem for Ashmead's (1899) "Pisoninae" is Pis- and his family group name becomes Pisinae. Ironically it is clear from the suffixes of the three species Ashmead (1899:251) listed under *Pison* that he had no clear idea of its gender (*laevis, conformis, fasciatum*).

Sphecidae versus Sphegidae: Authors of the last century often spelled the family Sphegidae following Latreille's (1802b) original grammatical error in using Spheg- as the stem for the family-group name. Leach (1815) used the correct stem Sphec- and Tillyard (1926) was one of the first people to clearly explain why this was correct. According to Don Cameron (in litt to Menke) the genitive of the Greek word "wasp" is sphêkos. To quote Cameron,

"You get the stem of the word by removing the genitive singular ending -os leaving the stem sphek-". Latininized this becomes Sphec-.

Sceliphrini versus Pelopoeini: Pelopoeus Latreille was made a junior synonym of *Sceliphron* Klug by Kohl (1890:102), and apparently because of this, Ashmead (1899) proposed the name Sceliphrini. This name has been universally used all of this century instead of the older Pelopoeini Leach 1815, and Article 40b of the International Code of Zoological Nomenclature permits maintenance of Sceliphrini. Article 40b also states that the younger name (Sceliphrini) takes the date of the name it has replaced (Pelopoeini), in this case 1815. Thus Podiini de Saussure, 1892 is a synonym of Sceliphrini 1899 (1815).

SOME COMMENTS ON CURRENT SPHECID CLASSIFICATION

Apoidea versus Sphecoidea: A growing consensus of workers share the belief that sphecids and bees form a monophyletic group and thus belong in one superfamily (see for example, Brothers 1975, Gauld and Bolton 1988, Finnamore and Michener 1993, Hanson and Gauld 1995). Michener (1986) demonstrated that Apoidea is an older name than Sphecoidea.

Status of Heterogynaidae: The status of this group has vacillated recently between a subfamily of Sphecidae or as a family. In the most recent phylogenetic analysis, Brothers and Carpenter (1993) treated the group as a family.

Ohl's classification of Sphecinae: Ohl's (1996a) phylogenetic analysis has resulted in some changes in the way genera are grouped in this subfamily. The genus *Stangeella* is shown to be most closely allied to Sphecini. Unfortunately instead of simply using existing family-group names with appropriate tribal and subtribal endings, he introduced a few new names that are not based on existing genera. Thus they are unavailable. Also he was apparently unaware of priorities among existing family-group names. An approximation of his classification is shown below using available family-group names; the result is five tribes instead of the usual three. However, my interpretation may not accurately express Ohl's own ideas. Included genera are in parentheses. Ohl's new family-group names are included in brackets. The ending -ina indicates subtribe. No valid family-group names are available for two of his names, Palmodomorpha and Acutoclypeata.

Chloriontini (*Chlorion*)
Sceliphrini [Lutifera]
  Podiina (*Dynatus, Penepodium, Trigonopsis, Podium*)
  Sceliphrina (*Chalybion, Sceliphron*)
Stangeellini (*Stangeella*)
Sphecini [Eusphecinomorpha]
  Sphecina (*Sphex, Isodontia*)
  Prionychina (*Prionyx, Palmodes, Chilosphex*) [the last two genera are grouped under Palmodomorpha]
Ammophilini
  [Acutoclypeata] (*Hoplammophila, Eremnophila*)
  Ammophilina [Ammophilomorpha] (*Podalonia, Parapsammophila, Eremochares, Ammophila*)

In a more recent paper, Ohl (1996b) reiterated the monophyly of *Dynatus, Penepodium, Trigonopsis* and *Podium* and he called the assemblage the "Podiinae" which he regards as a subgroup of "Sceliphrina". I interpret his Podiinae as identical with Podiina in the outline I have just given for Ohl (1996a), and his Sceliphrina as coordinate with Sceliphrini. Ohl (1996b) says his unorthodox hierarchical system that ignores traditional family-group name suffixes follows Hennig (1969). To quote Ohl: " . . . no use is made of any Linnaean categories (familia, subfamilia, tribus, etc.) to characterize the absolute rank of monophyletic taxa, but I refer to a certain taxon [by] assigning a proper name instead." Ohl admits " . . . that abandoning the Linnaean categories leads

to the loss of any information tradionally implied by the suffixes formerly associated with certain categories (e.g. -idae for the category 'family')".

Lauterbach (1996) introduced the use of standard suffixes for the various family-group taxa in Ohl (1996a), namely -ozoa and -zoon. Consideration of Lauterbach's proposal is outside the scope of the present paper.

Current interpretation of Crabroninae: This subfamily includes the Larrinae following Lomholdt (1985), Menke (1988), Hanson and Menke (1995), and Menke and Fernández (1996).

Status of Mesopalarina: The affinities of *Mesopalarus* have always been problematical (Bohart and Menke, 1976; Lomholdt, 1985) until Gess (1996) described the hitherto unknown male. Gess's study demonstrated a close relationship with *Palarus*. Because of that, I have placed Mesopalarina as a subtribe of Palarini. However, monotypic subtribes are probably unwarranted in Palarini.

Subtribes in Gorytini: Nemkov and Lelej (1996) analyzed this tribe cladistically and recognized six subtribes, four of which were new. I have provisionally adopted their classification here.

RESULTS OF FAMILY-GROUP NAME SURVEY

The following tabulation outlines the correct names for all higher taxa. Junior synonyms are listed in parentheses. There are only three name changes, one of which is simply a minor spelling correction, and these are indicated in boldface. The only one of major consequence is Bembicinae for the Nyssoninae. The subfamily arrangement used here basically follows Bohart and Menke (1976) although it reflects some subsequently published opinions of groupings. Finnamore (1993) elevated most subfamilies to families and regrouped some taxa. Laphyragoginae was included in Astatidae; Xenosphecinae in Mellinidae; and Entomosericinae in Nyssonidae. I have not attempted to reflect Finnamore's classification here. Subtribes are identified by the suffix -ina.

Lomholdt (1982) divided the family into two families: Sphecidae and Larridae, the latter containing all but the Ampulicinae and Sphecinae. However Larridae is not the oldest available name for this group sensu Lomholdt. The family name would have to be chosen from one of the following established by Latreille (1802b), i.e., Mellinidae, Crabronidae, Bembicidae, and Philanthidae. Acloque (1897) recognized two apparent families, Crabronidi and Sphegidi, the first essentially the same as Larridae sensu Lomholdt. However Acloque's Sphegidi also included pompilids and thus is not comparable to Sphecidae of Lomholdt. Nevertheless I think Acloque should be considered as the first person to use Crabroninae and thereby establish it as the name for Crabronidae sensu Lomholdt.

Apoidea Latreille 1802a (Sphecoidea Latreille 1802b)
Heterogynaidae Nagy 1969 (originally spelled Heterogynidae)
Sphecidae Latreille 1802b
Ampulicinae Shuckard 1840
Ampulicini Shuckard 1840
Dolichurini Lepeletier 1845
Sphecinae Latreille 1802
Sceliphrini Ashmead 1899 (1815—Art. 40b.i) (Pelopoeini Leach 1815, Podiini de Saussure 1892, Chloriontini Fernald 1905)
Sceliphrina Ashmead 1899 (1815) (Pelopoeini Leach 1815, Podiini de Saussure 1892, Chloriontini Fernald 1905)
Stangeellina Bohart and Menke 1976
Sphecini Latreille 1802
Sphecina Latreille 1802
Prionychina Bohart and Menke 1963
Ammophilini André 1886
Pemphredoninae Dahlbom 1835
Psenini Costa 1858 (Mimesini Cresson 1887)

Psenina Costa 1858 (Mimesina Cresson 1887)
Psenulina Gittins 1969
Pemphredonini Dahlbom 1835
Pemphredonina Dahlbom 1835
Stigmina Bohart and Menke 1976
Spilomenina Menke 1989
Ammoplanina Evans 1959
Astatinae Lepeletier 1845
Astatini Lepeletier 1845 (Diploplectrini Fox 1895, Dimorphini Brues and Melander 1932)
Dinetini Fox 1895
Laphyragoginae Bohart and Menke 1976
Crabroninae Latreille 1802 (Larrinae Latreille 1810)
Larrini Latreille 1810 (Gastrosericini André 1886, Larradini de Saussure 1892)
Larrina Latreille 1810 (Larradina de Saussure 1892)
Gastrosericina André 1886 (Tachytina Bohart 1951)
Miscophini Fox 1895 (Lyrodini Fox 1895, Sericophorini Dalla Torre 1897, Nitelini Dalla Torre 1897, Paranyssontini Turner 1914)
Palarini Börner 1919
Palarina Börner 1919
Mesopalarina Lomholdt 1985
Trypoxylini Lepeletier 1845 (Pisini Ashmead 1899)
Bothynostethini Fox 1895
Scapheutini Menke 1968
Oxybelini Leach 1815
Crabronini Latreille 1802 (Anacrabronini Ashmead 1899, Lindeniini Ashmead 1899, Thyreopodini Ashmead 1899, Rhopalini Ashmead 1899, Solenjini Bradley 1926, Pemphilidini Pate 1935, Karossiini Pate 1936.)
Entomosericinae Dalla Torre 1897
Xenosphecinae Bohart and Menke 1976
Bembicinae Latreille 1802 (Nyssoninae Latreille 1804)
Mellinini Latreille 1802
Heliocausini Handlirsch 1925
Alyssontini Dalla Torre 1897
Nyssonini Latreille 1804 (spelling conserved in Opinion 1115)
Gorytini Lepeletier 1845 (Arpactini Turner 1915, Hoplisini Rohwer 1916)
Clitemnestrina Nemkov and Lelej 1996
Olgiina Nemkov and Lelej 1996
Argogorytina Nemkov and Lelej 1996
Exeirina Dalla Torre 1897
Handlirschiina Nemkov and Lelej 1996
Gorytina Lepeletier 1845 (Arpactina Turner 1915, Hoplisina Rohwer 1916)
Stizini Costa 1859
Bembicini Latreille 1802
Bembicina Latreille 1802
Stictiellina Bohart and Horning 1971
Philanthinae Latreille 1802
Eremiaspheciini Menke 1967
Odontosphecini Menke 1967
Philanthini Latreille 1802
Aphilanthopini Bohart 1966
Pseudoscoliini Menke 1967
Cercerini Lepeletier 1845

FOSSIL FAMILY-GROUP NAMES

Alexander Rasnitsyn provided me with family-group names of fossil taxa. Each family-group name is followed by the genus on which it is based, and the proper stem.

Angarosphecidae Rasnitsyn (1975:109). *Angarosphex* Rasnitsyn 1975, Angarosphec-

Baissodidae Rasnitsyn (1975:122). *Baissodes* Rasnitsyn 1975, Baissod-

Rasnitsyn (1980) synonymized Angarosphecidae under Sphecidae, reducing it to a subfamily of the latter. Rasnitsyn (in litt. to Menke) states that Baissodidae should be synonymized under Angarosphecinae, but he has yet to publish this change.

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